LISTING OF THE CLAIMS

1. (Original) An error correction circuit for determining an error in rotational speed of a recordable disk of a disk drive, comprising:

a sinusoidal error calculation portion adapted to generate a true oscillation error signal; and

a summation portion adapted to combine the true oscillation error signal with a spindle error signal to generate a total error signal;

wherein the sinusoidal error calculation portion is adapted to generate a new true oscillation error signal based on the total error signal.

2. (Original) The error correction circuit according to claim 1, further comprising:

an actual error calculation portion adapted to:

generate a target rotational speed of the recordable disk;

determine an actual rotational speed of the recordable disk; and

determine the spindle error signal based on the target rotational speed and the actual rotational speed of the recordable disk.

3. (Original) The error correction circuit according to claim 2, wherein the actual error calculation portion further comprises:

a target time circuit that generates a desired rotational speed signal for the recordable disk;

a target time integrator that integrates the desired rotational speed signal over a revolution of the recordable disk to generate a target rotational speed of the recordable disk;

a measured time circuit adapted to generate a measured time signal over a revolution of the recordable disk based on a measured rotational speed of the recordable disk;

a measured time integrator that integrates the measured time signal to determine an actual rotational speed of the recordable disk; and

an actual error calculation summation circuit that subtracts the target rotational speed of the recordable disk from the actual rotational speed of the recordable disk to determine the spindle error signal.

4. (Original) The error correction circuit according to claim 3, wherein the measured time circuit generates the measured time signal from information received from a photodetector.

5. (Original) The error correction circuit according to claim 1, further configured to provide the total error signal to a disk drive control mechanism to adjust rotational speed of the recordable disk.

6. (Original) The error correction circuit according to claim 1, wherein the sinusoidal error calculation portion further comprises:

a first sinusoidal signal generator adapted to generate a first sinusoidal signal;

a second sinusoidal signal generator adapted to generate a second sinusoidal signal having a different phase from the first sinusoidal signal;

an adapter algorithm circuit adapted to multiply the first sinusoidal signal and the second sinusoidal signal by a feedback factor based on the total error signal to generate the new true oscillation error signal; and

a sinusoidal summation portion adapted to sum the multiplied first sinusoidal signal and the second multiplied sinusoidal signal.

7. (Original) The error correction circuit according to claim 6, wherein the first sinusoidal signal generator is a sine signal generator and the second sinusoidal signal generator is a cosine signal generator.

8. (Original) The error correction circuit according to claim 6, wherein the feedback factor is the total error signal.

9. (Original) The error correction circuit according to claim 8, wherein:

the adapter algorithm circuit is adapted to multiply the first sinusoidal signal and the second sinusoidal signal by an adaptation coefficient.

10. (Original) The error correction circuit according to claim 1, wherein the summation portion is adapted to combine the new true oscillation error signal with the spindle error signal to generate a new total error signal.

11. (Original) The error correction circuit according to claim 10, further configured to provide the new total error signal to a disk drive control mechanism to adjust rotational speed of the recordable disk.

12. (Original) A disk drive, comprising:

a recordable disk;

an encoder wheel having reflective and non-reflective portions configured to rotate at the same rate of speed as the recordable disk;

a light source adapted to project light onto the encoder wheel;

a photodetector adapted to receive reflected light from the encoder wheel and generate a photodetector signal based thereon; and

a control circuit, responsive to the photodetector signal, that generates a control signal used to adjust the rotational speed of the recordable disk, the control circuit comprising:

a sinusoidal error correction portion adapted to generate a true oscillation error signal;

a summation portion adapted to combine the true oscillation error signal with a spindle error signal to generate a total error signal; and

wherein the sinusoidal error calculation portion is adapted to generate a new true oscillation error signal based on the total error signal.

13. (Original) The disk drive according to claim 12, wherein said encoder wheel is distinct from the recordable disk, and wherein the recordable disk and the encoder wheel are both mounted to a spindle shaft that is driven by a spindle motor.

14. (Original) The disk drive according to claim 12, wherein the encoder wheel is disposed directly on said recordable disk.

15. (Original) The disk drive according to claim 12, wherein said encoder wheel is integrally formed into said recordable disk.

16. (Original) The disk drive according to claim 12, wherein the error correction circuit further comprises:

an actual error calculation portion adapted to:

generate a target rotational speed of the recordable disk;

determine an actual rotational speed of the recordable disk based on the photodetector signal; and

determine the spindle error signal based on the target rotational speed and the actual rotational speed of the recordable disk.

17. (Original) The disk drive according to claim 16, wherein:

the photodetector receives a first level of reflected light when the light source illuminates the reflective regions;

the photodetector receives a second level of reflected light when the light source illuminates the non-reflective regions; and

the actual error calculation portion generates the actual rotational speed based on elapsed time between when the photodetector receives the first level of light and the second level of light.

18. (Original) The disk drive according to claim 17, wherein the second level of light is approximately no light.

19. (Original) The disk drive according to claim 17, wherein the second level of light is below a predetermined threshold level.

20. (Original) The disk drive according to claim 12, wherein the actual error calculation portion further comprises:

a target time circuit that generates a desired rotational speed signal for the recordable disk;

a target time integrator that integrates the desired rotational speed signal over a revolution of the recordable disk to generate the target rotational speed of the recordable disk;

a measured time circuit adapted to generate a measured time signal over a revolution of the recordable disk based on a measured rotational speed of the recordable disk;

a measured time integrator that integrates the measured time signal to determine an actual rotational speed of the recordable disk; and

an error calculation summation circuit that compares the target rotational speed of the recordable disk from the actual rotational speed of the recordable disk to determine the spindle error signal.

21. (Original) The disk drive according to claim 12, wherein the sinusoidal error calculation portion further comprises:

a first sinusoidal signal generator adapted to generate a first sinusoidal signal;

a second sinusoidal signal generator adapted to generate a second sinusoidal signal that has a different phase than the first sinusoidal signal;

an adapter algorithm circuit adapted to multiply the first sinusoidal signal and the second sinusoidal signal by a feedback factor based on the total error signal to generate the new true oscillation error signal; and

a sinusoidal summation portion adapted to sum the first multiplied sinusoidal signal and the second multiplied sinusoidal signal.

22. (Original) The disk drive according to claim 21, wherein the first sinusoidal signal generator is a sine signal generator, and the second sinusoidal signal generator is a cosine signal generator.

23. (Original) The disk drive according to claim 21, wherein the adapter algorithm circuit is adapted to multiply the first sinusoidal signal and the second sinusoidal signal by the total error signal.

24. (Original) The disk drive according to claim 23, wherein the adapter algorithm circuit is adapted to multiply the first sinusoidal signal and the second sinusoidal signal by an adaptation coefficient.

25. (Original) The disk drive according to claim 12, wherein the summation portion is adapted to combine the new true oscillation error signal with the spindle error signal to generate a new total error signal.

26. (Original) The disk drive according to claim 25, wherein a motor drive circuit is adapted to drive a spindle motor at a rotational speed based on the new total error signal.

27. (Original) A method for determining an error in a rotational speed of the recordable disk in a disk drive assembly, comprising:

generating a true oscillation error signal;

determining an actual rotational speed of the recordable disk;

determining a target rotational speed of the recordable disk;

combining the target rotational speed of the recordable disk with the actual rotational speed of the recordable disk to determine a spindle error signal; and

combining the spindle error signal with the true oscillation error signal to determine a total error signal.

28. (Original) The method according to claim 27, further comprising driving the recordable disk at a rotational speed based on the total error signal.

29. (Original) The method according to claim 27, wherein the step of generating a true oscillation error signal further comprises:

generating a first sinusoidal signal;

generating a second sinusoidal signal having a different phase than the first sinusoidal signal;

multiplying the first sinusoidal signal and the second sinusoidal function by a feedback factor to obtain a multiplied first sinusoidal signal and a second multiplied sinusoidal signal; and

adding the first multiplied sinusoidal signal to the second multiplied sinusoidal signal to obtain the true oscillation error signal.

30. (Original) The method of claim 29, wherein said first sinusoidal signal is a sine wave signal, and the second sinusoidal signal is a cosine wave signal.

31. (Original) The method according to claim 29, further comprising the step of multiplying the first sinusoidal signal and the second sinusoidal signal by an adaptation coefficient.

32. (Original) The method of claim 27, further comprising the step of generating a new true oscillation error signal based on the total error signal.

33. (Original) The method according to claim 27, further comprising driving a recordable disk based on the total error signal.

34. (Previously Presented) An error correction circuit for determining an error in rotational speed of a recordable disk of a disk drive, comprising:

means for generating a true oscillation error signal;

means for providing a spindle error signal; and

means for combining the true oscillation error signal with the spindle error signal to generate a total error signal.

35. (Previously Presented) The error correction circuit according to claim 34, wherein the means for generating the true oscillation error signal further comprises:

a sine signal generator means for generating a sine signal;

a cosine signal generator means for generating a cosine signal;

an adapter algorithm means for multiplying the sine signal and the cosine signal by a feedback factor based on the total error signal to generate a new true oscillation error signal; and

a sinusoidal summation means for summing the multiplied sine signal and the multiplied cosine signal.

36. (Previously Presented) The error correction circuit according to claim 35, wherein the feedback factor is the total error signal.

37. (Previously Presented) The error correction circuit according to claim 36, wherein the adapter algorithm means is for multiplying the sine signal and the cosine signal by an adaptation coefficient.